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THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of:

HIRASE, Masaki et al.

Group Art Unit: 2812

Serial No.: 09/908,941

Examiner: Jennifer M. Kennedy

Filed: July 20, 2001

P.T.O. Confirmation No.: 1043

For. SEMICONDUCTOR DEVICE AND METHOD FOR MANUFACTURING THE  
SAME

**REQUEST FOR RECONSIDERATION**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Date: October 7, 2004

Sir:

Reconsideration of the rejections contained in the Office Action dated July 7, 2004,  
in view of the following detailed comments is respectfully requested.

In the Office Action, claims 3-4 were rejected under 35 USC § 103(a) as being unpatentable over the patent to Zhang et al in view of the patent to Krivokapic et al. In making this rejection, it was asserted as before that the cited Zhang et al patent teaches the method as claimed except for depositing the oxide insulation in the trenches by performing HDPCVD. The Krivokapic et al patent was then asserted to teach forming an insulating oxide layer in a trench using HDPCVD. It was concluded that it would be obvious to use HDPCVD in the method of the Zhang et al patent since the Krivokapic et al patent teaches HDPCVD is self-planarizing and thus facilitates subsequent production

steps. In addition, newly added claim 9 was rejected under 35 USC § 103(a) as being unpatentable over the patent to Zhang et al in view of the patent to Krivokapic et al for essentially the same reasons as set forth in the above rejection. Reconsideration of these rejections in view of the following comments is respectfully requested.

It was argued in the last response that the subject claims are distinguished over the cited patents to Zhang et al and Krivokapic et al, whether taken singly or in combination, since independent claims 3, 7, 9 and 10 each recite that the protective mask fully covers the element partitioning trench. Specifically, it was urged that the Zhang et al patent shows the use of mask 60 in Figs. 3A and 3B and the width of the mask 60 is less than that of the STI trench 42 and thus the mask 60 does not fully cover the STI trench. Independent claims 3, 7, 9 and 10 then were amended to recite that the protective mask fully covers the element partitioning trench and it is urged that the Zhang et al patent fails to teach or suggest, among other things, this required claim limitation.

In the subject Action, a specific response was made to the above argument. In particular, it apparently was asserted that, in Figure 5a of the Zhang et al patent, it is clearly shown that the mask 60 fully covers the STI trench 42.

From a review of Figure 5a of the Zhang et al patent alone, it would seem that the above assertion might be correct that the mask 60 fully covers the STI trench. In this

regard, it is noted that lead line for numeral 60 indicating the mask terminates at the broken rectangle, whereas the lead line for STI would appear to indicate the area defined by the solid rectangle. Thus, this Figure, on first blush, would appear to show a mask 60 larger than the trench STI.

However, from a careful consideration of the remainder of the disclosure, particularly the disclosure relative to the first mask L11 and the relationship between that which is shown in Figure 3a and Figure 5a, it is submitted that Figure 5a is inconsistent therewith and is incorrect. Specifically, attention is directed to the disclosure at column 3, lines 37-39 of the Zhang et al patent which teaches that Figure 5a is a top plan view. From a review of the remainder of the Figures, Figure 5a can only be a top view of that shown in Figure 3a since element 60 is shown in each. Clearly, Figure 3a shows that mask 60 has a width less than that of trench 40. Since the sidewalls of trench 40 would not be visible in a plan view such as that of Figure 5a, the dimensions of the trench would be shown in dashed lines to be consistent with Figure 3a. Consequently, the lead lines of Figure 5a are incorrect. That is, the lead line from numeral 60 should terminate at the solid rectangle and the lead line from STI should terminate at the dashed rectangle.

In view of the above, it is submitted that Figure 5a inaccurately shows the construction of the device as disclosed in the Zhang et al patent and thus the subject rejection based thereon is inappropriate. Consequently, the same distinction as was set

forth in the last response, that is, the cited patents to Zhang et al and Krivokapic et al, whether taken singly or in combination, do not teach that the protective mask fully covers the element partitioning trench is still applicable and patentably distinguishes the subject claims over the cited patents.

For the reasons stated above, withdrawal of the rejections under 35 U.S.C. § 103(a) and allowance of claims 3, 4 and 9 as amended over the cited Zhang et al and Krivokapic et al patents are respectfully requested.

Claim 5 was rejected under 35 USC § 103(a) as being unpatentable over the above patents to Zhang et al and Krivokapic et al in view of the patent to Schoenfeld et al. Claim 6 was rejected under 35 USC § 103(a) as being unpatentable over the above patents to Zhang et al, Krivokapic et al and Schoenfeld in view of the patent to Kuroi et al. Also, claims 7 and 8 were rejected under 35 USC § 103(a) as being unpatentable over the above patents to Zhang et al and Krivokapic et al in view of the patent to Kuroi et al and, newly added claim 10 was rejected over the same patents. Reconsideration of these rejections in view of the following comments is respectfully requested.

It is submitted that the distinction as developed above with respect to the initial two rejections is applicable to these rejections as well. Accordingly, the above remarks are reiterated herein with regard to these rejections.

Serial Number: 09/908,941  
OA dated 07/07/04  
Amdt. filed 10/7/04

For the reasons stated above, withdrawal of the rejections under 35 U.S.C. § 103(a) and allowance of claims 5 through 10 as amended over the cited Zhang et al and Krivokapic et al patents alone or in any combination with the additionally cited patents are respectfully requested.

In view of the foregoing, it is submitted that the subject application is now in condition for allowance and early notice to that effect is earnestly solicited.

In the event this paper is not timely filed, the undersigned hereby petitions for an appropriate extension of time. The fee for this extension may be charged to Deposit Account No. 01-2340, along with any other additional fees which may be required with respect to this paper.

Respectfully submitted,

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